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CONTENTS

Gunder—Several New Varieties of and Aberrant Lepidoptera (Rhopalocera) from California.....	1	Muscoid Diptera from 1914 to 1919..	22
Hayes—A Preliminary List of the Ants of Kansas (Hymenoptera, Formicidae).....	10	Coolidge—Burroughs and Bugs.....	24
Curran—Three New Nearctic Tachinidae (Dipt)	13	Schaus—Two New Saturnids from South America (Lepid.).....	25
Ewing—New Mites of the Family Dermanyssidae (Acarina).....	18	Coolidge—Strymon Ioki Skinner—A Correction. (Lepid., Lycaenidae.)	26
Townsend—Work on the United States National Museum Collection of		Editorial—An International Congress of Entomology in 1925?.....	27
		Editorial—How to Meet the Rising Costs of Production.....	27
		Entomological Literature.....	28

Several New Varieties of and Aberrant Lepidoptera (Rhopalocera) from California.

By J. D. GUNDER, Pasadena, California.

(Plate I)

It is calculated that about one-half of the listed varieties of United States Rhopalocera are now to be found within the borders of California, and yet few books have dealt exclusively or in part with this big field.

Mr. W. G. Wright, in his book "The Butterflies of the West Coast," did a great service by illustrating some of the older western things. It is really wonderful that twenty years ago he was able to do so well. In recent years our entomologists have found need of a new illustrated local text, compiled from long series and where possible collected personally from the various districts, so as to untangle some of the contested problems that have come up. The forthcoming work by Dr. John Adams Comstock, of the Southwest Museum, Los Angeles,

California, on "California Butterflies" will fill that want. Dr. Comstock needs no entomological introduction. His continual work of building up the Southwest Museum to a place deserving of the "third largest city" is his prime undertaking and will be his monument. Always a collector and interested in Lepidoptera by specialty, he has provided a safe place which some day will become the Mecca of the West for those seeking reference or a permanent depository for their collections.

I inscribe this plate to him and am pleased to suffix his name to several of the following specimens.

All figures are fairly true to color. They have been very slightly reduced in size.

1. **Brephidium exilis** Bdv. (fig. 11), ab. ♀ **coolidgei** nov. aberr. (fig. L).

Upper side. Primaries: normal. Secondaries: having the four black spots merging through and conspicuous, being heavily rimmed more so posteriorly by chalk white crescents forming a border at the outer margin much as on the under side; otherwise normal.

Under side. (Fig. L.) Primaries: inner half and beyond a brown reniform discal spot chalk white immaculate with irregular dentiform anterior edge; followed by a broad clay brown area to a row of small triangular white spots which extend from apex to inner angle; between these and outer margin a narrow border of dark brown which is cut near inner angle with white as in typical specimens; fringes as usual. Secondaries: inner half as in primaries with anterior edge more irregular and excurved, especially at interspaces of median nervules, with addition of three dark brown spots transverse across center base area; the black spots at outer margin as in normal specimens. Expanse: 17 mm.

Data: *Allotype* ♀ (Author's Coll.), Los Angeles, Los Angeles County, California. July 12, 1922. *Paratype* 1-♀ (Coll. of K. R. Coolidge), Los Angeles, Los Angeles County, California. Aug. 3, 1922.

Named for Mr. K. R. Coolidge, Los Angeles, California.

Note: Fig. 111 is an interesting *exilis* ♂ with five wings. It is normal except for the additional primary on the right. The author has two such identical specimens.

2. **Philotes battoides** Behr. var. **bernardino** B. & Mc. D. (fig. mm), ab. ♀ **baldyensis** nov. aberr. (fig. M).

Upper Side. Normal.

Under side. (Fig. M.) *Primaries:* Having a solid black area of the form of a Greek cross between the costal and inner margins in the discal area, its borders just included, and formed by all the spots except the one nearest the base which is larger and quadrate; the two submarginal rows of spots are as usual. *Secondaries:* All inner spotting heavier. Expanse: 19 mm.

Data: Allotype ♀ (Author's Coll.), Camp Baldy, San Bernardino County, California, July 5, 1924.

Named after Camp Baldy, which is also the type locality of var. *bernardino*.

3. **Plebeius monticola** Clem. (half-fig. nn), ab. ♀ **pallida** nov. aberr. (fig. N).

Upper side. (Fig. N.) *Primaries:* Normal. *Secondaries:* Entire replacement of submarginal red color by chalk white with no design change.

Under side. Ground color of both primaries and secondaries very chalk white with no change in pattern and spotting normal. Expanse: 27 mm.

Data: Allotype ♀ (Author's Coll.), Cajon Pass, San Bernardino Mountains, San Bernardino County, California, May 14, 1922.

4. **Glaucopsyche xerces** Bdv. form **mertila** Edw. (fig. oo) ab. ♂ **huguenini** nov. aberr. (fig. O).

Upper side. Normal.

Under side. (Fig. O.) *Primaries:* Row of black spots twice as large and egg-shaped with small ends pointing in; large black cell spot from which a whitish ray runs well into base. *Secondaries:* Row of spots equally enlarged; transverse cell streak becomes comet-shaped black spot parallel with costal margin and extending well into base and having additional small black spot, also white-encircled, half way to costal margin; additional small black spot well in base nearly concealed in the marginal hairs. Expanse: 28 mm.

Data: Holotype ♂ (Author's Coll.), San Francisco, California, April 24, 1917.

Named for Mr. T. C. Huguenin, San Francisco, California.

5. *Phaedrotes piasus* Bdv. var. *catalina* Reak. (fig. pp) ab.
♂ *gorgonioi* nov. aberr. (fig. P).

Upper side. Normal.

Under side. (Fig. P.) *Primaries:* Row of six black spots four times larger and oval; cell crescent and spot at base line become two large round spots joined together dumbbell form and very conspicuous. *Secondaries:* All spotting enlarged and elongated; cell area with irregular black tracings through the white. Expanse: 28 mm.

Data: Holotype ♂ (Author's Coll.), San Gorgonio Mountain, San Bernardino County, California, June 13, 1921.

Named after Mount San Gorgonio on whose slope this variety of *piasus* seems constant.

6. *Anthocharis sara* Bdv. form *reakirti* Edw. (fig. qq) ab.
♂ *sternitzkyi* nov. aberr. (fig. Q).

Upper side. (Fig. Q.) The orange red apical patch of normal specimens here becomes pale buff and the cream white ground color on both wings becomes chalk white with the under side markings showing through very distinctly; no design change.

Under side. Ground color very pale. Expanse: 36 mm.

Data: Holotype ♂ (Author's Coll.), San Francisco, California, April 22, 1924.

Named for Mr. R. F. Sternitzky, San Francisco, California.

Note: There seems to be no gradual transition of color in this species, which makes this specimen noteworthy, it being fresh and in perfect condition.

7. *Zerene eurydice* Bdv. ab. ♂ *newcombi* nov. aberr. (fig. R).

Upper side. (Fig. R.) Entirely lacking the orange color which is replaced by that lemon yellow found on normal specimens near the inner margin of secondaries. The replacement by lemon yellow is complete and is especially noticeable on secondaries, "dog's head" area and marginal apex spotting.

Under side. Lemon yellow as compared to orange tint of normal specimens. Expanse: 50 mm.

Data: Holotype ♂ (Author's Coll.), San Bernardino Mountains, San Bernardino County, California.

Named for Mr. Hal Newcomb, Pasadena, California.

Note: The figure on the plate shows a shadow near the body on the secondaries, this should not be mistaken for color. The replacement of color on this specimen is very similar to that of *E. eurytheme*, form *amphidusa*, ab. *unicitrina*, described and illustrated in Vol. XXXV, No. 5, Plate 2, Fig. J. For comparison with a normal *Z. eurydice* see fig. kk on above-mentioned plate.

8. *Basilarchia lorquini* Bdv. ab. ♂ **comstocki** nov. aberr. (fig. S).

Upper side. (Fig. S.) *Primaries:* Brown apical area twice larger and broad with no trace of markings except near costal on inner side where two small faint white markings occur; row of white spots through discal area become small and barely visible, being suffused by black, with the largest one near inner margin smaller than the smallest one on normal specimens and those nearest margins absent; cell spot merest white speck. *Secondaries:* Entirely black except for remains of suffused white spot in interspace above submedian vein; trace of red at anal angle as in normal specimens.

Under side. *Primaries:* White spotting as above with black in corresponding suffusion. *Secondaries:* Absence of white spotting with black and white replacement, otherwise normal. Expanse: 51 mm.

Data: Holotype ♂ (Author's Coll.), Bishop, Inyo County, California, August 28, 1921.

Named for Dr. John Adams Comstock, Los Angeles, California.

9. *Dione vanillae* L. ab. ♂ **comstocki** nov. aberr. (fig. T).

Upper side. (Fig. T.) *Primaries:* Black veining very heavy with brown interspaces practically closed and wholly so at the interspaces of the three black spots, the upper two of which are confluent with the black; cell area entirely black with white specks marking position of former black spots. *Secondaries:* Black at outer margin which in normal specimens forms a row of round brown spots, here becomes a broad solid black area, the inner side of which irregularly pierces the brown at interspaces, most deeply so at those of the two black spots which become confluent and are part of the black area itself.

Under Side. *Primaries:* Interspace silver spots at apex con-

fluent; ground color of cell entirely black; heavy black shading near inner angle. *Secondaries*: All silver spots near costal margin become black, others remain silver but are confluent through the interspaces. Expanse: 53 mm.

Data: Holotype ♂ (Author's Coll.), Monrovia, Los Angeles County, California, July 19, 1924.

Named for Dr. John Adams Comstock, Los Angeles, California.

10. *Leptotes marina* Reak. (fig. uu) ab. ♀ *violacea* nov. aberr. (fig. U).

Upper side. (Fig. U.) *Primaries*: Violet blue overcasting entire wing except for a darker connecting border along all of costal and outer margins; normal spotting and lines scarcely visible; no white marks. *Secondaries*: Clear violet blue, except for strip along costal margin and some shading at outer margin where only one spot is conspicuous with no white darts showing; no center marking. *Under side*. Normal. Expanse: 22 mm.

Data: Allotype ♀ (Author's Coll.), Oak Glenn, Riverside County, California, July 19, 1924.

11. *Philotes sonorensis* Feld. (figs. 1a, 2a, 3a) form *comstocki* nov. form. (figs. 1-♂, 2-♀, 3-♂ underside).

Differs from *sonorensis* on the upper side in both sexes in having only one large black spot at the cell on the primaries, instead of four or more above the orange spots. Also no spotting on the secondaries. The under sides are quite different being solid brown-black through the basal and discal areas instead of being spotted and shaded; similarly, the single black spot is again in evidence.

♂.—(Holotype, fig. 1.) (Paratype under side, fig. 3.) Expanse: 24 mm.

Upper side. Brilliant silvery blue; alternately spaced black and white fringes; outer margins edged by a black line; primaries with a narrow, black, marginal border, rather broad at apex and tapering off invisibly at inner angle; two orange-red patches near margin in median nervule interspaces; prominent, irregular, single, black spot at end of cell. *Under side*. *Primaries*: Greyish brown; orange-red patches and single black spot repeated; line of small transverse black marks parallel and near to outer margin, somewhat flared in gray and interrupted

by the two orange patches. *Secondaries*: Darker greyish brown through all of basal and discal areas than on primaries with the limbal lighter in shade and having a row of faint white spots barely discernible through its length; at end of cell a faint transverse black streak.

♀.—(Allotype, fig. 2.) Expanse: same.

Upper side. Darker blue when compared with male; orange patches on primaries and secondaries in like position; single black cell spot as in male; primaries have a broad and continuous black border at outer margin, preceding which is a black line cut by the veins and orange patches; black border on secondaries becomes a series of black spots in interspaces. *Under side*. As in male.

Data: Holotype ♂ (Author's Coll.), San Gabriel River, Duarte, Los Angeles County, California, March 15, 1922. Allotype ♀ (Author's Coll.), San Gabriel River, Duarte, Los Angeles County, California, February 20, 1922. Paratypes 6-♂ and 2-♀, similar dates through 1922 to 1923.

Paratypes and topotypes will be deposited with the Southwest Museum, Los Angeles, and the Academy of Sciences, San Francisco.

Named for Dr. John Adams Comstock, Los Angeles, California.

Note: Specimens first taken were thought aberrations, however, as many were found by local collectors, *all remaining constant, and in both sexes alike*, this new form was anticipated.

12. *Polites sabuleti* Bdv. var. *comstocki* nov. var. (fig. 4-♂, fig. 5-♀).

P. sabuleti is widespread over California, both along the coast and through the highlands from San Diego north. Var. *tecumseh* is a higher altitude race, smaller in size and with extended markings. This new variety *comstocki* will be termed a desert race, as it ranges through the Imperial Valley along the roadside vegetation and shrubs of the irrigation ditches. It differs principally from *sabuleti* on the under side, having a paler ground color with all markings very obscure. Some specimens show a clear ground with no markings in evidence, the darkest marked being less than that found on a series of straight *sabuleti*. The females are apt to be more heavily marked in the basal areas.

Data: Holotype ♂ (Author's Coll.), El Centro, Imperial County, California, October 4, 1923. Expanse: 15 mm. (Fig. 4a, paratype, under side.) Allotype ♀ (Author's Coll.), El Centro, Imperial County, California, October 5, 1923. Expanse: 18 mm. (Fig. 5a, paratype, under side.) Paratypes: 12-♂, 3-♀, similar dates, also localities. Paratypes and topotypes will be deposited with the Southwest Museum, Los Angeles, and the Academy of Sciences, San Francisco, California.

Named for Dr. John Adams Comstock, Los Angeles, California.

13. *Argynnis calippe* Bdv. (fig. 6a) var. *comstocki* nov. var. (figs. 6-♂, 7-♀).

♂.—Holotype (fig. 6). Expanse: 53 mm.

Typical *calippe* evidently found around the San Francisco district and described by Boisduval and figured correctly, among others, by Oberthür, has a *red* fulvous ground color between the submarginal row of crescents and row of round spots on both wings, whereas this southern variety, *comstocki*, has a clear fulvous ground color over the entire surface of the wings. Also, this southern group has the black shading confined to the basal area and up to the mesial line, whereas, in the other, the black shading extends *entirely* along the inner margin on the primaries and well through the discal area of the secondaries. Compared in series, the northern ones show slightly heavier vein markings, although this varies in individuals. W. G. Wright's figures show this southern variety, but evidently he did not have access to the true *calippe* and hence did not notice the difference. Among other illustrators even Holland shows the true northern specimens (compare fig. 6 with fig. 6a). The under sides remain about the same, except that the red color is more widely spread which probably causes the constant difference noticeable on the upper sides.

♀.—(Allotype, fig. 7.) Expanse: 61 mm.

Same descriptive difference holds good. The females are larger which is generally true in the argynnids.

Data: Holotype ♂ (Author's Coll.), Los Angeles, Los Angeles County, California, May 26, 1919. Allotype ♀ (Author's Coll.), Los Angeles, Los Angeles County, California, May 20, 1920. Paratypes 11-♂ and 5-♀, same locality and similar dates, in collections of Mr. Chas. Ingham and author. Paratypes and topotypes will be deposited with the Southwest Museum,

Los Angeles, and the Academy of Sciences, San Francisco, California.

Named for Dr. John Adams Comstock, Los Angeles, California.

Note: Gratitude is expressed to Mr. Chas. Ingham, Secretary Lorquin Entomological Club, Los Angeles, California, for loan of many specimens for comparison.

EXPLANATION OF PLATE I.

Fig. L—*Brephidium exilis* Bdv. ab. ♀ *coolidgei* nov. aberr. (under side).

Fig. ll—*Brephidium exilis* Bdv. (typical ♀-under side).

Fig. ll—*Brephidium exilis* Bdv. (showing 5 wings).

Fig. M—*Philotes battoides* Behr. var. *bernardino* B. & McD. ab. ♀ *baldyensis* nov. aberr. (under side).

Fig. mm—*Philotes battoides* Behr. var. *bernardino* B. & McD. (typical ♀-under side).

Fig. N—*Plebeius monticola* Clem. ab. ♀ *pallida* nov. aberr.

Fig. nn—*Plebeius monticola* Clem. (typical-♀).

Fig. O—*Glaucopsyche xerces* Bdv. form *mertila* Edw. ab. ♂ *huguenini* nov. aberr. (under side).

Fig. oo—*Glaucopsyche xerces* Bdv. form *mertila* Edw. (typical ♂-under side).

Fig. P—*Phaedrotes pius* Bdv. var. *catalina* Reak. ab. ♂ *gorgonioi* nov. aberr. (under side).

Fig. pp—*Phaedrotes pius* Bdv. var. *catalina* Reak. (typical ♂-under side).

Fig. Q—*Anthocharis sara* Bdv. form *reakirti* Edw. ab. ♂ *sternitzkyi* nov. aberr.

Fig. qq—*Anthocharis sara* Bdv. form *reakirti* Edw. (typical-♂).

Fig. R—*Zerene eurydice* Bdv. ab. ♂ *newcombi* nov. aberr.

Fig. S—*Basilarchia lorquini* Bdv. ab. ♂ *comstocki* nov. aberr.

Fig. T—*Dione vanillae* L. ab. ♂ *comstocki* nov. aberr.

Fig. U—*Leptotes marina* Reak. ab. ♀ *violacea* nov. aberr.

Fig. uu—*Leptotes marina* Reak. (typical-♀).

Figs. 1, 2, 3—*Philotes sonorensis* Feld. form *comstocki* male (fig. 1), female (fig. 2), male (under side, fig. 3).

Figs. 1a, 2a, 3a—*Philotes sonorensis* Feld. typical male (fig. 1a), typical female (fig. 2A), typical male, under side (fig. 3a).

Figs. 4-5a—*Polites sabuleti* Bdv. var. *comstocki* nov. var. male (fig. 4), male, under side (fig. 4a), female (fig. 5), female, under side (fig. 5a).

Figs. 6-7—*Argynnis calippe* Bdv. var. *comstocki* nov. var. male (fig. 6), female (fig. 7).

Fig. 6a—*Argynnis calippe* Bdv. typical male (fig. 6a).